Assessment of knowledge levels about physical activity and practice among university students in Baghdad city/ 2023

Imaan Mohammed Kadhim[*1], Prof. Dr. Batool Ali Ghalib Yassin[*2]

[*1]M.B.Ch.m/ College of Medicine/ University of Baghdad;[*2]M.B.CH. B, FICMS, FamCO/ College of Medicine/ University of Baghdad / Iraq

Abstract

Background: People with knowledge of the physical activity benefits tend to be more active; however, this knowledge is usually based on the basic concept that physical activity is "good" for health.

Objectives: To assess the knowledge and practice levels towards physical activity among university students in Baghdad city, to measure the practice of physical activity, and the association between level of knowledge and physical activity behavior.

Methods: This cross-sectional study was conducted at (Baghdad, Al-Mustansiriyah, and Al-Nahrain universities) during the period from February 2023 to March 2024. In this study, (600) students were included, and data was gathered through a predesigned questionnaire containing information about socio-demographics (age, sex, income marital state, college, and grade), questions on knowledge of physical activity, and global physical activity to assess physical activity levels of college students at the assigned universities.

Results: The majority of participants (99.3%) agreed that physical activity is good for health, however, (4.9 out of 10) participants had low knowledge scores about diseases associated with physical inactivity, and nearly half of the participants (53.3%) couldn't correctly identify the exact recommendations required for healthy physical activity. Furthermore, 69% of the participants overestimated and 19.2% correctly estimated the reduced risk of disease resulting from physical activity.

Conclusions: Male participants, older age groups, and those working while studying were significantly more physically active. Participants were significantly more physically active when identifying more diseases associated with physical inactivity. They identified recommendations for healthy physical activity and overestimated the role of physical activity in reducing the disease risk. Despite the detailed knowledge that medical students had, they were less physically active than non-medical students.

Keywords: Physical activity, Knowledge level, Practice, Good health

Introduction

Physical activity (PA) is any bodily movement produced by skeletal muscles that require energy expenditure. Physical activity refers to all movement including during leisure time, for transport to and from places, or as part of a person's work. Both moderate- and vigorous-intensity physical activity improve health [1,2].

Physical inactivity is a key risk factor for non-communicable diseases (NCDs) [3]. It is estimated that 1 in 4 adults in the world are inactive. Globally, more than 80% of the adolescent population is physically inactive [1].

Regular and moderate-intensity physical activity offers significant health benefits, including reduced disability and mortality, improved quality of life, and enhanced psychological well-being [4].

Failure to engage in the required amount of physical activity places one at risk of a variety of chronic and lifestyle-related diseases such as type-2 *Diabetes mellitus*, cardiovascular diseases, cancer, cerebrovascular accidents, hypertension, obesity, and osteoarthritis [5].

Participation in regular PA improves blood glucose control and can prevent or delay type 2 diabetes, along with positively affecting lipids, blood pressure, cardiovascular events, mortality, and quality of life. Structured interventions combining PA and modest weight loss have been shown to lower type 2 diabetes risk by up to 58% in high-risk populations [6].

Physical inactivity contributes to increased medical expenditure and social burden as a result of the prevalence of disability in the adult workforce [4,7].

Young adulthood is a critical time for lifestyle physical activity habits where a decline in physical activity and an increasingly sedentary time are worrying and may increase the risk of developing adverse health consequences later in life [8]. On the other hand, physical activity patterns during college years are important influences on habitual physical activity during the full span of adult life and unfortunately, there is a significant decrease in regular exercise during one's college years in comparison to the school years before college [9,10].

Physical activity is one of the best things people can do to improve their health, it is vital for healthy aging and can reduce the burden of chronic diseases and prevent early death [11].

Lack of physical activity is a global problem [12], and physical inactivity is described as a pandemic that needs urgent action [13], Insufficient physical activity is the 4th leading risk factor for mortality. Approximately 3.2 million deaths and 32.1 million disability-adjusted life

years (DALYs) each year are attributable to insufficient physical activity, and it still causes a heavy burden worldwide [14].

Subjects and methods

The current cross-sectional study was conducted at (Baghdad, Al-Mustansiriyah, and Al-Nahrain universities) during the period from February 2023 to March 2024. In our study, (600) students were included, (300) from medical group colleges including (medicine, dentistry, and pharmacy) and (300) students from non-medical group colleges including (science, economy, literature). All students of the assigned universities who agreed to participate in data collection during the study period were included in the study.

A questionnaire form was developed, modified, and translated by the researcher after reviewing the literature, and was approved by three experts in the field. Then the data was collected by distributing a self-administered questionnaire to the students in the cafeteria, gardens, and halls, asking them to fill it out, and then collecting it again.

The questionnaire included Socio-demographic data including, age (in years), sex, marital status (single, married), working with study, income (low, moderate, and high according to their perception), college, and grade. It also included knowledge-related questions and practice-related questions. The questionnaire had 2 sections:

Section 1: Socio-demographic data included age (in years), sex, marital status (single, married), working with study, income (low, moderate, and high according to their perception), college, and grade.

Section 2: Included 4 levels of knowledge-related questions. **Level 1**: consisted of one question for assessing knowing that physical activity is beneficial for health and physical inactivity is harmful to health. With 5 response options, 5=strongly agree, 4=agree, 3=undecided, 2=disagree, and 1=strongly disagree, with a level score of 5. **Level 2**: To assess the knowledge about health conditions affected by physical activity level. **Level 3**: consisted of one question to assess knowing exactly how much physical activity is needed to improve health with four possible answers only one of them is correct, knowledge level was coded as a binary 'correct' or 'incorrect.'.

Level 4: consisted of four questions to assess the knowledge of the participants about the risk of catching the diseases (cardiovascular disease, colon cancer, depression, and *Diabetes mellitus* type 2) if they didn't have proper physical activity.

Official agreements were obtained from the Scientific Committee at the Department of Family and Community Medicine College of Medicine University of Baghdad and the Iraqi

Board for Medical Specialization. Official agreements were obtained from the Baghdad, Al-Mustansiriyah, and Al-Nahrain, University. Verbal consent was obtained from all participants after explaining the aim of the study and assuring confidentiality.

Statistical analysis

The data was entered, cleaned, and analyzed using SPSS ver. 26 software. The categorical variables were presented by frequencies and percentages. The numerical variables were tested for normality using the Shapiro-Walk test and presented by mean with standard deviation for overall description and median with inter-quartile range for comparison due to non-homogeneity across the compared levels. The Mann-Whitney U nonparametric test was used for comparison between two levels and the Kruskal-Wallis nonparametric test was used for comparison among three or more levels.

Results

The current study included 600 college students, 200 from each of the three universities (Baghdad, Al-Nahrain, and Al-Mustansiriah). Half of the participants were from medical colleges. Their age ranged from (18-25) years with a mean of 21.5±1.6 years. The mean age of the medical field students was (22±1.4) years and for non-medical was (20.9±1.5) years. Female students were 332 (55.3%), 174 (58%) of the medical students and 158 (52.7%) of the nonmedical students. Most of the students 576 (96%) were singles, 287 (95.7%) of the medical students and 289 (96.3%) of the non-medical students. Out of the 600 students, 517 (86.2%) considered themselves as having moderate socioeconomic status, and nearly two-thirds of the participants 393 (65.5%) were in the first two grades (Table 1).

Table (1): Socio-demographic characteristics of the participants

Variables	Medical (n=300)	Non-medical (n=300)	Total (N=600)
Sex, n (%)			
Male	126 (42)	142 (47.3)	268 (44.7)
Female	174 (58)	158 (52.7)	332 (55.3)
Marital status, n (%)			
Married	13 (4.3)	11 (3.7)	24 (4.0)
Single	287 (95.7)	289 (96.3)	576 (96)
Income, n (%)			
Low	40 (13.3)	11 (3.7)	51 (8.5)
Moderate	255 (85)	262 (87.6)	517 (86.2)
High	5 (1.7)	26 (8.7)	31 (5.2)
Grade, n (%)			
1	78 (26)	130 (43.3)	208 (34.7)
2	96 (32)	89 (29.7)	185 (30.8)
3	60 (20)	48 (16)	108 (18)
≥ 4	66 (14)	33 (11)	75 (12.5)

The benefit of physical activity on people's health was denied by no one in the study sample. Only four students 0.7% did not know about it, and all of them were from non-medical colleges. On the contrary, 239 (39.8%) agreed and 357 (59.5%) strongly agreed that it was beneficial with an overall weighted average score of 4.59 out of 5 (table 2)

On a scale from 0 to 10 the students were asked about the health condition that is affected by physical activity level, the scores ranged from zero to 10 with an overall average knowledge score was 4.9 ± 1.7 (5.5 ± 1.5 for the medical field students, and 4.3 ± 1.8 for other students). (Table 2).

The person should be physically active for at least 30 minutes five days a week to meet the criteria of the World Health Organization for physical activity. This fact was known by 280 (46.7%) of the total students, 153 (51%) of the medical students, and 127 (42.3%) of the non-medical students (Table 2).

The overall average knowledge score about the role of physical inactivity in increasing the risk of diseases (Cardiovascular, CA colon, Diabetes, and depression) on an own person's health was 3.8 ± 0.5 out of 5, the medical field students was 3.80 ± 0.5 compared to 3.75 ± 0.5 non-medical (Table 2).

Table (2): Levels of participants' knowledge about physical activity

Levels of physical activity knowledge	Medical (n=300)	Non-medical (n=300)	Total (n=600)
Level 1, n (%)			
Strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)
Disagree	0 (0.0)	0 (0.0)	0 (0.0)
Don't know	0 (0.0)	4 (1.3)	4 (0.7)
Agree	119 (39.7)	120 (40)	239 (39.8)
Strongly agree	181 (60.3)	176 (58.7)	357 (59.5)
Level 2 knowledge, M (SD)	5.5 ± 1.5	4.3 ± 1.8	4.9 ± 1.7
Level 3 knowledge, n (%)	153 (51)	127 (42.3)	280 (46.7)
Level 4 knowledge, M (SD)	3.80 ± 0.5	3.75 ± 0.5	3.80 ± 0.5

The students then asked about their physical activity in different domains.

Transporting by walking or bike (≥ 10 minutes/day) was reported by 486 (81.5%) of the students with 4.5 ± 1.4 days per week and 45.9 ± 18.7 minutes per day as average.

Intense leisure physical activity was reported by 123 (20.6%) of the total sample with a mean of 52.6 ± 28.7 minutes per day for an average of 2.7 ± 1.5 days per week.

Moderate leisure physical activity was reported by 305 (50.9%) of the total students with a mean of 54.6 ± 31 minutes per day for an average of 3.6 ± 1.5 days per week. (table 3)

Table (3): Physical activity of the participants

Physical activity	**Medical** Mean ± SD	**Non-medical** Mean ± SD	**Total** Mean ± SD	**P-value**
While transporting				
walking or bike No. (%) *a	271 (90.3)	215 (72.6)	486 (81.5)	
Days/week transport by walking or bike*b	4.5 ± 1.4	4.6 ± 1.5	4.5 ± 1.4	0.209
Minutes /day transport by walking or bike*b	44.3± 21	47.9 ± 19.07	45.9 ± 18.7	0.052
Leisure physical activity				
Intense, No. (%) *a	38 (12.7)	85 (28.6)	123 (20.6)	
Days/week of intense leisure PA*b	2.3 ± 1.6	2.9 ± 1.4	2.7 ± 1.5	0.051
Minutes /day of intense leisure PA*b	49.7 ± 15	53.9 ± 33	52.6 ± 28.7	0.457
Moderate, No. (%) *a	147 (49)	158 (52.8)	305 (50.9)	
Days/week of moderate leisure PA*b	3.3 ± 1.5	4 ± 1.5	3.6 ± 1.5	<0.001*
Minutes /day of moderate leisure PA*b	47.2 ± 26	62.6 ± 28.6	54.6 ± 31	<0.001*

*** PA: Physical activity, SD: Standard deviation, Significant at 0.05 level, [a] chi-square test, [b] independent t-test.**

Students, who did not know the beneficial effect of regular physical activity on health, had significantly (*P*=0.002) the longest time of intense physical activity; 300 minutes/week compared to 180 minutes/week for those who agreed and 90 minutes/week for those who strongly agreed, however the median time of physical inactivity got shorter (*P*=0.004) with an increase of agreement for the benefit of regular physical activity for people's health

The median time spent in moderate activity was significantly (*P*<0.001) longer among those who correctly answered the question regarding the recommendation of healthy physical activity (330 vs. 240 minutes/week). (Table 4)

Table (4): Time of intense, moderate physical activity per week, according to knowledge levels about physical activity

Knowledge	Intense PA (mins/W)	P-value	Moderate PA (mins/W)	P-value
	Median (IQR)		Median (IQR)	
Level 1 [b]				
Don't know	300 (210 - 530)	0.002*	135 (120 - 150)	0.068
Agree	180 (90 - 270)		270 (160 - 455)	
Strongly agree	90 (60 - 180)		280 (172.5 - 540)	
Level 3 [a]				
Incorrect	120 (60 - 225)	0.251	240 (120 - 390)	<0.001*
Correct	120 (60 - 240)		330 (180 - 565)	

PA: physical activity, mins/W: minutes per week, IQR: inter-quartile range, *significant at 0.05 levels, [a] Mann-Whitney U test, [b] Kruskal Wallis test.

The time spent in intense physical activity was shown to be significantly correlated with students' knowledge score about the diseases caused by physical inactivity (r= 0.184, *P*=0.016) in addition it was significantly inverse correlated with their knowledge score about the role of physical inactivity in increasing the risk of certain diseases (r= - 0.163, *P*=0.033). Knowledge score about the diseases caused by physical inactivity (r= -0.277, *P*<0.001), and knowledge score about the role of physical inactivity in increasing the risk of certain diseases (r= -0.113, *P*<0.001). Table (**5**)

Table (5): Correlation of time of intense, moderate physical activity per week, according to participants' age and knowledge levels (2 & 4) about physical activity

Variables	Weekly minutes of intense physical activity		Weekly minutes of moderate physical activity	
	Correlation Coefficient	P value	Correlation Coefficient	P value
Level 2 Knowledge	0.184	0.016*	-0.007	0.86
Level 4 Knowledge	-0.163	0.033*	-0.009	0.834

*** Spearman's correlation is significant at the 0.05 level (2-tailed).**

Discussion

Physical inactivity is a major global threat and a major global public health problem [12]. Previous studies suggested that general knowledge of the health benefits of physical activity does not predict practice well, although most of the participants had good knowledge and attitudes toward physical activity, and the practice pattern was insufficient among most of them [15,16]. This may be because most people only have a vague understanding of the relationship between physical activity and health, and when a more careful approach to understanding people's knowledge is taken, the association to behavior becomes clearer [17].

The prediction that the majority of adults would have low levels of knowledge regarding the benefits and risks of physical inactivity beyond Level 1, was supported in the current study, but at higher knowledge levels, the percentage of participants with correct knowledge was much lower, and the same conclusion was reached by Fredriksson et al (2018) [17].

At level 2 knowledge, the average of students who correctly identified health conditions related to physical inactivity is lower than the study done by Fredriksson et al (2018), but similar to previous studies done in Saudi Arabia (2020) [18].

At level 3 knowledge, students with correct knowledge about recommendations of healthy physical activity which is almost similar to the study done by Fredriksson et al (2018).

Regarding level 4 knowledge, students' overall average knowledge score about the role of physical inactivity in increasing the risk of (Cardiovascular, CA colon, Diabetes, and depression) diseases on an own person's health was similar to the study done by Fredriksson

The medical students had a higher knowledge score compared to (non-medical) students about the diseases affected by physical activity, and correct knowledge about the recommendations of healthy physical activity. Yet the current study goes inconsistence to Saudi Arabia's study on knowledge score about the role of physical inactivity in increasing the risk of diseases on an own person's health (level 4 knowledge) [19], which was almost found to have a similar knowledge score (3.8 ± 0.5 in medical students compared to 3.7 ± 0.5 in non-medical), and this may indicate the higher knowledge score is not affected by the study field.

Regarding student's physical activity, there is a higher percentage of students with PA during transport with a higher weekly average time of PA than in the previous two studies done in Riyadh/Saudi (2022) and Kuwait (2018) [20,21], this difference might be due to our country's transporting system or might be also due to whether difference, transporting system

problems, and traffic jam lead to less active transporting in these countries (Saudi Arabia and Kuwait). [21]

In their leisure time, a lower percentage of students had PA, and a lower weekly average time of intense PA than in previous studies done in Saudi Arabia, and Malaysia [20,22]. This might be explained by the participants in these countries having better access to physical activity or sports facilities, having better access to health promotion information, and having a higher motivation to participate in physical activity and sports. (65)

Students who did not know the beneficial effect of regular physical activity on health had significantly the longest weekly time of intense physical activity, this might confirm that general knowledge of the beneficial effect of regular physical activity on health doesn't predict the practice level.

Students who had higher knowledge scores at levels 2 and 3 would be significantly more active runs in agreement with a previous study done by Fredriksson et al (2018) [17].

Knowledge level about the role of physical inactivity in increasing the risk of certain diseases on an own person's health (level 4 knowledge) showed a significant inverse correlation with the weekly time spent for intense PA and a significant inverse correlation with the median time of daily physical inactivity, while Fredriksson study (2018) showing no significant relationship between at this level, this inverse or lack of association is might be explained by the participants who correctly identified Level 4 knowledge may believe that inactivity will lead to an increased risk of disease for them, however as this risk may not be perceived as urgent they may not see a reason to be active early on. [17].

References

1.WHO. Physical Activity Fact Sheet. 2022 [Internet]. Available from: https://www.who.int/news-room/fact-sheets/detail/physical-activity.

2. Piggin J. What Is Physical Activity? A Holistic Definition for Teachers, Researchers and Policy Makers.2020. Front Sport Act Living [Internet]. Jun [cited 2024 Jan 12]; 2.

3.NCD. Physical Inactivity | NCD Alliance. 2024. Available from: https://ncdalliance.org/why-ncds/risk-factors-prevention/physical-inactivity.

4. Malm C, Jakobsson J I. Physical Activity and Sports-Real Health Benefits: A Review with Insight into the Public Health of Sweden. 2019. Sport (Basel, Switzerland) [Internet]. [cited 2023 Jun 21]; 7(5):123.

5. Dhuli K, Naureen Z, Medori MC, Fioretti F, Caruso P, Perrone MA, et al. Physical activity

for health. J Prev Med Hyg [Internet]. 2022 Jun 1 [cited 2023 Mar 17];63:150. Available from: /PMC/articles/PMC9710390.

6. Martiskainen TM, Lamidi ML, Venojärvi M, Tikkanen H, Laatikainen T. Effectiveness of physical activity counseling provided for people with type 2 diabetes mellitus in primary healthcare in North Karelia, Finland: a register-based evaluation study. 2022.BMJ Open[Internet].[cited 2023 Oct 27];12(7): e058546.
7. Duijvestijn M, de Wit GA, van Gils PF, Wendel-Vos GCW. Impact of physical activity on healthcare costs: a systematic review. BMC Health Serv Res [Internet]. 2023 Dec 1 [cited 2024 Mar 15];23(1):572.
8. Vanhelst J, Béghin L, Drumez E, Labreuche J, Polito A, De Ruyter T, et al. Changes in physical activity patterns from adolescence to young adulthood: the Belinda study. Eur J Pediatr [Internet]. 2023 Jun 1 [cited 2023 Mar 17];182(6):2891–902.
9. Alkhateeb SA, Alkhameesi NF, Lamfon GN, Khawandanh SZ, Kurdi LK, Faran MY, et al. Pattern of physical exercise practice among university students in the Kingdom of Saudi Arabia (before beginning and during college): A cross-sectional study. BMC Public Health [Internet]. 2019 Dec 21 [cited 2023 Mar 26];19(1):1–7.
10. Booth JN, Leary SD, Joinson C, Ness AR, Tomporowski PD, Boyle JM, et al. Associations between objectively measured physical activity and academic attainment in adolescents from a UK cohort. 2014. Br J Sports Med [Internet]. [cited 2023 Jun 8]; 48(3): 265–70.
11. CDC. About Physical Activity. Center for Disease Control and Prevention.2024 [Internet]. [cited 2023 Jun 8]. Available from: https://www.cdc.gov/physicalactivity/index.html
12. WHO. Health and Well-Being. 2024 [Internet]. [cited 2023 May 16]. Available from:https://www.who.int/data/gho/data/major-themes/health-and-wellbeing.
13. Ding D, Ramirez Varela A, Bauman AE, Ekelund U, Lee IM, Heath G, et al. Towards better evidence-informed global action: lessons learnt from the Lancet series and recent developments in physical activity and public health. Br J Sports Med [Internet]. 2020 Apr 1 [cited 2023 Aug 16];54(8):462–8.
14. Xu YY, Xie J, Yin H, Yang FF, Ma CM, Yang BY, et al. The Global Burden of Disease attributable to low physical activity and its trends from 1990 to 2019: An analysis of the Global Burden of Disease study. Front Public Health [cited 2023 Jan 15];10.
15. Habib MA, Dey M, Chowdhury AI, Rahman T, Kundu RK. Current knowledge, attitude,

and practice (KAP) towards physical activity (PA) and its impact on obesity management in Bangladesh: A cross-sectional study, 2022. Heal Sci Reports [Internet]. Nov [cited 2024 Feb 15]; 5(6):115.

16. Sharma N, Kumar N, Malik JS, Singh S, Jangra A. Study to Assess the Knowledge, Attitude and Practices of Biomedical Waste Management among Healthcare Personnel at a Tertiary Care Hospital in Haryana, 2017. J Adv Res Med Sci Technol [Internet]. May [cited 2024 Feb 15];1(1&2):34–9.
17. Fredriksson SV, Alley SJ, Rebar AL, Hayman M, Vandelanotte C, Schoeppe S E. How are different levels of knowledge about physical activity associated with physical activity behavior in Australian adults?.2018. PLoS One [Internet]. Nov [cited 2023 Oct 30]; 13(11):99.
18. Rahamathulla MP, Sha M. Frequency and Awareness of Risk Factors of Non-Communicable Diseases among University Students in Saudi Arabia. 2020. Pakistan J Med Sci [Internet]. May [cited 2024 Feb 19]; 36(4):740.
19. Alghamdi SA, Alqarni AA, Alghamdi AF, Alghamdi TK, Hasosah NM, Aga SS, et al. Knowledge, attitude, and practices regarding healthy lifestyle and dietary habits among medical and non-medical university students,2021. J Fam Med Prim Care [Internet]. [cited 2024 Feb 19];10(9):3436.
20. Bashatah A, Qadhi OA, Sadoun A Al, Syed W, Al-Rawi MBA. Evaluation of Young Adults' Physical Activity Status and Perceived Barriers in the Riyadh Region of Saudi Arabia,2023. J Multidiscip Healthc [Internet]. [cited 2024 Feb 20]; 16:557. Available from: https://pubmed.ncbi.nlm.nih.gov/36879652/
21. Hashem R, Hamer M, McMunn A, López J WP, Owen GG, Rowlands A, et al. Physical Activity and Sedentary Behavior Levels of Kuwaiti Adolescents: The Study of Health and Activity Among Adolescents in Kuwait, 2017. J Phys Act Heal [Internet]. [cited 2024 Feb 28]; ;12(7):197. Available from: https://pubmed.ncbi.nlm.nih.gov/29172971/
22. Saleem F, Bashaar M, Hassali MA, Haque N, Iqbal Q, Ahmad A, et al. Assessment of barriers to physical activities among university students in Malaysia,2018. Pharm Pharmacol Int J [Internet]. [cited 2024 Feb 28]; 18(5):267 Available from: https://www.researchgate.net/publication/329558482